

1           UNITED STATES PATENT AND TRADEMARK OFFICE

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4           BEFORE THE BOARD OF PATENT APPEALS  
5           AND INTERFERENCES

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8           *Ex parte* FRANK C. SMITH, JR.

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10           Appeal 2007-2901  
11           Application 10/701,146  
12           Technology Center 3600

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14           Decided: December 12, 2007

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16           *Before* WILLIAM F. PATE III, MURRIEL E. CRAWFORD, and  
17           JENNIFER D. BAHR, *Administrative Patent Judges*.

18  
22PATE, III, *Administrative Patent Judge*.

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24           DECISION ON APPEAL

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26           STATEMENT OF CASE

27

28           The Appellant appeals under 35 U.S.C. § 134 (2002) from a final  
29 rejection of claims 1 to 11. We have jurisdiction under 35 U.S.C. § 6(b)  
30(2002).

1       The Appellant claims a canard design aircraft that includes an opening  
2 at the rear of the fuselage with a door for allowing loading of objects into the  
3 aircraft.

4       Independent claims 1 and 11 read as follows:

- 5           1. A cargo adapted aircraft, comprising:  
6              a canard having two and only two significant horizontal  
7              lifting surfaces, with a smaller lifting surface in front of a larger  
8              lifting surface; and  
9              a large opening at the rear of the fuselage through which  
10             objects can be loaded, the opening having a door type of  
11             closure for flight.  
12  
13           11. A cargo-adapted personal aircraft, comprising:  
14              a canard having two significant horizontal lifting surfaces  
15              with a smaller lifting surface in front of a larger lifting surface;  
16              a large opening at the rear of the fuselage through which  
17             objects can be loaded; and  
18              having no empennage.  
19

20       The prior art relied upon by the Examiner in rejecting the claims is:

21	Sutton	2,492,245	Dec. 27, 1949
22	Weaver	2,759,691	Aug. 21, 1956
23	Rutan	4,641,800	Feb. 10, 1987
24	Firestone	3,572,615	Mar. 30, 1971

25  
26       Claims 1-11 were rejected under 35 U.S.C. § 112, second paragraph,  
27 as being indefinite.

28       Claims 1-6 and 8-11 were rejected under 35 U.S.C. § 103(a) as  
29 unpatentable over Sutton in view of Weaver and Rutan.

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<sup>1</sup> Claim 7 was rejected under 35 U.S.C. § 103(a) as unpatentable over Sutton in view of Weaver, Rutan, and Firestone.

3 We AFFIRM-IN-PART and REMAND for further proceedings  
4 consistent with this DECISION.

5

## ISSUES

7       1. Whether the Appellant has shown that the Examiner erred in  
8 rejecting claims 1-11 as being indefinite.

9        2. Whether the Appellant has shown that the Examiner erred in  
10 rejecting claims 1-6 and 8-11 as unpatentable over Sutton in view of Weaver  
11 and Rutan.

12       3. Whether the Appellant has shown the Examiner erred in rejecting  
13 dependent claim 7 as unpatentable over Sutton in view of Weaver, Rutan,  
14 and Firestone.

15

## FINDINGS OF FACT

17 The record supports the following findings of fact (FF) by a  
18 preponderance of the evidence.

<sup>19</sup> 1. Sutton discloses a tail-less, "flying wing" design aircraft (Fig. 1; 20 Col. 1, 52-Col. 2, l. 4).

21        2. Weaver discloses an aircraft 10 with cargo loading door 17 at the  
22 rear end of the fuselage 12 (Figs. 1-3; Col. 2, ll. 40-49).

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1       3. Rutan '800 discloses a canard design aircraft 10 having only two  
2horizontal lifting surfaces with a smaller lifting surface 16 in front of a larger  
3lifting surface 14 (Figs. 1-3; Col. 4, ll. 26-34).

4       4. Rutan '800 also discloses a canard design aircraft without booms  
5 or an empennage (Figs. 1-3).

6       5. The Appellant states that “[p]rior ‘canard’ designs for cargo-  
7oriented craft that incorporated a rear fuselage door, the only known design  
8being the Rutan ATT, have utilized three horizontal lifting surfaces,  
9including a boom-supported tail empennage” (Spec. 3, ll. 9-11). Thus, a  
10canard design, cargo-oriented aircraft with a rear fuselage door is known.

11       6. The Appellant further states “[e]xperience flying model canards,  
12constructing an experimental canard, accompanying Mr. Rutan flying an  
13experimental canard, being connected to the Voyager project and witnessing  
14a single tractor engine successfully tested with a canard, all convinced the  
15instant inventor that the canard design was a cost effective feasible solution”  
16(App. Br. 5, ll. 9-12). Thus, a canard design aircraft with a single tractor  
17engine has been successfully tested.

PRINCIPLES OF LAW

20        35 U.S.C. § 112, second paragraph, recites that “[t]he specification  
21 shall conclude with one or more claims particularly pointing out and  
22 distinctly claiming the subject matter which the applicant regards as his  
23 invention.” Claims are in compliance with 35 U.S.C. § 112, second  
24 paragraph, if “the claims, read in light of the specification, reasonably

1apprise those skilled in the art and are as precise as the subject matter  
2permits.” *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367,  
31385 (Fed. Cir. 1986). When a claim uses a word of degree, like  
4“substantially,” the Specification must be examined to determine whether  
5some standard for measuring that degree is provided and whether one of  
6ordinary skill in the art would understand what is claimed when the claim is  
7read in light of the Specification. *Seattle Box Co. v. Industrial Crating &*  
8*Packing, Inc.*, 731 F.2d 818, 826 (Fed. Cir. 1984).

9       In addition, 35 U.S.C. § 103 “forbids issuance of a patent when ‘the  
10differences between the subject matter sought to be patented and the prior art  
11are such that the subject matter as a whole would have been obvious at the  
12time the invention was made to a person having ordinary skill in the art to  
13which said subject matter pertains.’” *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct.  
141727, 1734 (2007). The Supreme Court reaffirmed the principle that “[t]he  
15combination of familiar elements according to known methods is likely to be  
16obvious when it does no more than yield predictable results.” *KSR*, 127  
17S.Ct. at 1739. The Court further explained that “[o]ften, it will be necessary  
18for a court to look to interrelated teachings of multiple patents; the effects of  
19demands known to the design community or present in the marketplace; and  
20the background knowledge possessed by a person having ordinary skill in  
21the art, all in order to determine whether there was an apparent reason to  
22combine the known elements in the fashion claimed by the patent at issue.”  
23*Id.* at 1740-41. The Court noted that “[t]o facilitate review, this analysis  
24should be made explicit.” *Id.*, citing *In re Kahn*, 441 F.3d 977, 988 (Fed.

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1Cir. 2006) (“[R]ejections on obviousness grounds cannot be sustained by  
2mere conclusory statements; instead, there must be some articulated  
3reasoning with some rational underpinning to support the legal conclusion of  
4obviousness”). However, “the analysis need not seek out precise teachings  
5directed to the specific subject matter of the challenged claim, for a court  
6can take account of the inferences and creative steps that a person of  
7ordinary skill in the art would employ.” *Id.* at 41.

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## 11 ANALYSIS

### 12 Rejection of claims 1-11 under 35 U.S.C. § 112

13 The Examiner states that the term “significant” in the limitation “two  
14significant horizontal lifting surfaces” of independent claims 1 and 11 is  
15indefinite because the term is vague, raising the question as to what  
16qualifies as a significant horizontal lifting surface (Ans. 3, l. 19-Ans. 4, l. 2).

17 The Appellant contends that in view of the Specification, one of  
18ordinary skill would understand what is being claimed (App. Br. 3, ll. 31-  
1934). In support, the Appellant refers to portions of the Specification stating  
20parenthetically that “significant” means non trivial and non *de minimus*  
21(Spec. 4, l. 29-32). We agree with the Appellants that the term “significant”  
22does not render claims 1-11 indefinite in the present case.

23 Even though the term “significant” is a term of degree as the  
24Examiner notes, the claim limitation “significant horizontal lifting surfaces,”

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1reasonably apprises those skilled in the art as to the claim scope when read  
2in light of the Specification, and the term is as precise as the subject matter  
3permits. *Hybritech*, 802 F.2d at 1385; *Seattle Box*, 731 F.2d at 826. While  
4the terms “non trivial” and “non *de minimus*” set forth in the Specification to  
5clarify the meaning of “significant” are also relative terms, these terms assist  
6one of ordinary skill in the art of aviation in understanding that the  
7horizontal lift surfaces must be more than trivial and *de minimus*. The term  
8is also as precise as the subject matter permits because it would be difficult  
9for the Appellant to specifically quantify what constitutes a “significant  
10horizontal lifting surface.” A lifting surface having a specific dimension may  
11be important in the proper functioning of a small, light-weight aircraft, or be  
12entirely trivial and *de minimus* in a large, heavy aircraft. We believe this  
13fact will be appreciated by one of ordinary skill in the art. Therefore, in  
14view of the above, the Appellant has shown that the Examiner erred in  
15rejecting claims 1-11 based on the term “significant.”

16       The Examiner also rejected claims 1-10 as being indefinite because of  
17the term “type” in the limitation “door type of closure.” The Examiner cited  
18MPEP § 2173.05(b) E which states that addition of the word “type” can  
19render indefinite an otherwise definite expression (Ans. 3, ll. 16-18). We  
20agree.

21       The only instance in the Specification where similar language is found  
22states “any number of door types and closure arrangements could be  
23utilized” (Spec. 5, ll. 30-31). The Specification also states that “[m]any  
24other means for closure of openings are known and would be operable.”

1(Spec. 5, ll. 4-7). The Appellant has argued in the Appeal Brief that there  
2could be a spectrum of other types of closures for the opening including a  
3permanently sealed or welded shut type of closure, although such closures  
4do not appear to be described in the Specification (App. Br. 4, ll. 15-17).  
5The Specification appears to merely describe various embodiments of  
6“doors,” without any specific discussion as to what would constitute a “door  
7type of closure” that suggests something more inclusive than just doors.  
8Thus, the inclusion of the word “type” to the otherwise definite expression  
9“door” renders claims 1-10 indefinite because it extends the claim scope and  
10makes it unclear as to what the term “type” was intended to convey. *Ex*  
11*parte Copenhaver*, 109 USPQ 118 (Bd. App. 1955). Hence, the Appellant  
12has not shown that the Examiner erred in rejecting claims 1-10 as being  
13indefinite, but has shown that the Examiner erred in rejecting claim 11 as  
14being indefinite.

15

16       Rejection of claims 1-6, and 8-11 under 35 U.S.C. § 103

17       In rejecting these claims, the Examiner asserts that it would have been  
18obvious to one of ordinary skill in the art to modify the “flying wing”  
19aircraft of Sutton by adding a door at the rear of the fuselage as disclosed in  
20Weaver to “allow easy loading and unloading of cargos” (FFs 1 and 2; Ans.  
214, ll. 5-17). The Examiner further asserts that it would have been obvious to  
22one of ordinary skill in the art to add canard wings of Rutan ‘800 to  
23“improve maneuverability” of the flying wing aircraft of Sutton (FF 3; Ans.  
244, ll. 5-17).

1       The Appellant argues that the Examiner erred in that there is no  
2motivation to modify the flying wing of Sutton to provide the door of  
3Weaver, or to provide canard wing disclosed in Rutan '800 (App. Br. 6, l. 5-  
4App. Br. 7, l. 23; Reply 1, 13-Reply 3, l. 20). The Appellant further  
5contends that Sutton teaches away from adding a canard to the disclosed  
6flying wing aircraft (Reply 3, 21-Reply 5, l. 9).

7       We agree with the Appellant that one of ordinary skill in the art would  
8not be motivated to modify the "flying wing" aircraft of Sutton to  
9incorporate a canard wing of Rutan to thereby "improve maneuverability" as  
10asserted by the Examiner. Sutton does not suggest or teach desirability of a  
11canard wing, but rather proposes improvements to the flying wing design to  
12enhance control of diving moments and longitudinal stability (Col. 1, l. 52-  
13Col. 2, l. 4). As noted by the Appellant, Sutton appears to teach away from  
14the modification suggested by the Examiner by noting the use of an auxiliary  
15lifting surface forward of the center of gravity in the art (i.e. canard wing),  
16but not incorporating such an auxiliary lifting surface into the flying wing  
17aircraft disclosed (Col. 1, l. 29-36; Br. 7, ll. 1-8). Rutan '800 is directed to a  
18canard design aircraft with canard wings that can be pivoted to achieve high  
19lift (Col. 3, ll. 18-30).

20       While the Examiner need not seek out precise teachings directed to  
21the specific subject matter of the claim, the Examiner must provide a rational  
22basis for combining the references in the manner suggested. We do not  
23believe that the Examiner's reasoning for providing a canard wing on a  
24flying wing design aircraft is rational because in addition to Sutton teaching

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1 away from the modification suggested, there is no evidence of reasonable  
2 expectation for success that such a modified aircraft would be functional,  
3 especially considering that wing configuration is a fundamental aspect of an  
4 aircraft (Br. 7, ll. 15-20). Therefore, because the Examiner has not provided  
5 a rational basis for combining the references in the manner suggested, the  
6 Examiner erred in rejecting claim 1, as well as claims 2-6 and 8-11  
7 dependent thereon, as unpatentable over Sutton in view of Weaver and  
8 Rutan.

9 The Appellant also separately argued that the Examiner's rejection of  
10 claims 5, 6, and 11 under 35 U.S.C. § 103 is improper in view of the  
11 definitions for the recited "light personal aircraft" and "personal aircraft" set  
12 forth in the Specification (Spec. 5, ll. 8-11; App. Br. 7, ll. 25-30). However,  
13 the Appellant's arguments are moot in view of the above finding of  
14 Examiner error regarding independent claim 1.

15

16 Rejection of claim 7 under 35 U.S.C. § 103

17 For the reasons set forth above relative to claim 1, and because the  
18 Examiner's application of Firestone does not remedy the deficiency of the  
19 combination of Sutton, Weaver, and Rutan discussed above, the Examiner's  
20 rejection of claim 7 under 35 U.S.C. § 103 is cannot be sustained.

21

**REMAND TO THE EXAMINER**

23

1 The present Appeal is REMANDED to the Examiner to make  
2 additional factual findings and conclusion of law as to:

3 A. Whether claims 1-6 and 8-11 would have been obvious to one  
4 of ordinary skill in the art in view of Rutan ATTT which is a  
5 canard design aircraft for cargo use that includes a door at the rear  
6 of the fuselage and Rutan '800 that discloses a canard aircraft  
7 without an empennage and having only two significant horizontal  
8 lifting surfaces (FFs 3-5).

10 B. Whether claim 7 would have been obvious to one of ordinary  
11 skill in the art in view of Rutan ATTT and Rutan '800, in further  
12 view of the Appellant's statement that successful testing of a  
13 canard design aircraft with a single tractor engine was witnessed  
14 (FF 6).

**CONCLUSIONS OF LAW  
ORDER**

18 1. The Examiner's rejection of claims 1-10 as being indefinite is  
19 AFFIRMED.

20        2. The Examiner's rejection of claim 11 as being indefinite is  
21 REVERSED.

22       3. The Examiner's rejection of claims 1-6 and 8-11 as unpatentable  
23 over Sutton in view of Weaver and Rutan is REVERSED.

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1       4. The Examiner's rejection of claim 7 as unpatentable over Sutton in  
2 view of Weaver, Rutan and Firestone is REVERSED.

3 The present Appeal is REMANDED to the Examiner to make  
4 additional factual findings and conclusion of law.

5 No time period for taking any subsequent action in connection with  
6this appeal may be extended under 37 C.F.R. § 1.136(a). See 37 C.F.R.  
7§ 1.136(a)(1)(iv) (2006).

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**AFFIRMED-IN-PART; REMANDED**

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